Research Defence Society.

The Truth about Vivisection.

Pamphlets and Leaflets published by The Research Defence Society during February-July, 1910.

1. Diphtheria and Antitoxin.
2. Inoculations.
3. Experiments during 1909.
4. Charges of Cruelty against the Rockefeller Institute.
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Founded in January, 1908, to make generally known the facts about experiments on animals in this country, and the regulations under which they are conducted; the immense importance of such experiments to the welfare of mankind; and the great saving of human and animal life and health which is already due to them.

The Society gives information to all who desire to examine the arguments on behalf of experiments on animals; makes all necessary arrangements for lectures and debates; and publishes and distributes literature. Its present membership (August, 1910) is more than 3,400. It also has about 180 Associates.

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Form B 1.

21 Ladbroke Square,
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September, 1910.

Research Defence Society.

THE TRUTH ABOUT VIVISECTION.

I.

DIPHTHERIA AND ANTITOXIN.

Diphtheria is an infectious disease due to certain germs. These germs produce the dreaded membrane which you sometimes see in the throat of a child with diphtheria. They also produce a poison called toxin, which is the cause of the high fever, vomiting, swollen glands, and drowsiness of a bad case of the disease. This poison may also act on certain nerves, and thus cause paralysis of certain muscles. You know how, in some children, after they have recovered from the fever, they are unable for a time to swallow properly, or to see straight, because the muscles of the throat or of the eyes are injured by this poison. Sometimes the poison acts on the heart. and a patient may die from this cause.

The discovery of these germs was made about 1875. But it was a long time before any improvement was made in the treatment of the disease. Then, about 1890, it was found possible to protect rabbits against the disease, so that it could not be given to them. A very small dose of the poison was given to the rabbits, not enough to kill them, and then, next day, rather a larger dose, and then a still larger dose, till the rabbits were able to take, without inconvenience, a dose which would kill an ordinary rabbit. When the rabbits had been thus protected, it was impossible to give them diphtheria, even if the germs of the disease were rubbed on the back of their throats. They could not catch the disease. Then it was found that horses, like rabbits, could be protected against the disease. And it was found that there was something, in the blood of these protected horses, which acted as an antidote against the disease. The name of "anti-toxin" is given to this condition of the blood, because it acts against the toxin. Diphtheria antitoxin is just a little of the fluid part of the blood, drawn from protected horses kept for this purpose. These horses are in perfect health, they have no sort or kind of disease, they are sleek and well fed, and comfortable, and are kept in large, well-buiit stables, and are carefully groomed and exercised. They are a pleasant contrast to some of the horses that one sees about the streets. Of course, they are

carefully examined and tested to see that they are thoroughly sound and healthy, before they are used for the giving of the antitoxin. They take hardly any notice at all of the process of injecting them with the toxin, or of the process of drawing the blood from a vein just under the skin of the neck: they stand quietly to have it done, and are not bound, or thrown: in short they lead a very healthy and comfortable life.

The good results obtained with the antitoxin have stood the test of fifteen years in every part of the world. It is the same story alike in London, Paris, Berlin, Rome, St. Petersburg, Egypt, India, the Colonies, Japan and America. We may safely reckon that the number of lives saved by this time, which would have been lost if it were not for the antitoxin, is more than a quarter of a million. Of course, as with all epidemic diseases, so with diphtheria, the total number of cases varies widely from year to year. Antitoxin no more *prevents* the existence of the disease than umbrellas *prevent* the existence of rain, or blankets *prevent* the existence of cold weather; but that does not mean that umbrellas and blankets are useless.

There is one very important fact to be remembered. Antitoxin must be given *at once*. The longer you wait, once the disease has declared itself, *the worse for the child*. Take the following table, compiled from cases at a hospital of the Metropolitan Asylums Board. It shows the tremendous importance of giving the antitoxin *at the very beginning of the disease*, in all cases where any signs of it are present:—

No. of cases treated.	Day of disease on which antitoxin was given.	Fatal cases.	Case mortality.
2,135	1st day	0	0
1,441	2nd day	62	4.3
1,600	3rd day	178	11.12
1,276	4th day	220	17.24
1,645	5th day or later	308	18.72

But the antivivisectionists declare that the antitoxin is given anyhow, even to children who have nothing but a little common sore throat. *That is not true.* Besides, the antitoxin saves everywhere numbers of those very severe cases of diphtheria where the membrane has already obstructed the breathing, or has so blocked the windpipe that an opening has to be made in the windpipe, and a tube put into it (tracheotomy) to save the child from dying of suffocation. These children have not got "a common sore throat." The death rate among these cases in the years before the antitoxin was from 60 to 80 per cent. It has now, thanks to the antitoxin, been reduced to about 30 per cent.

For other pamphlets and leaflets, send a post-card to the Hon. Secretary, Research Defence Society, 21, Ladbroke Square, W.

Form B 2.

21, Ladbroke Square,
London, W.

September, 1910.

Research Defence Society.

THE TRUTH ABOUT VIVISECTION.

II.

INOCULATIONS.

No less than 95 per cent. of all experiments on animals in this country are inoculations made with a needle put under the skin, and a few experiments for the testing of drugs or food. That is to say, the animal is not cut, and no sort of operation is done on it. The cases of operation are only 5 per cent. of all experiments on animals. In every case of operation, the animal must be put under an anæsthetic. No operation of any sort or kind, more than the lancing of a vein just under the skin, is allowed to be done without an anæsthetic.

For inoculations, the animals used are mice, rats, guinea-pigs, or rabbits. It is not once in a hundred times that any other animal is used. The mice and other animals are well-kept, well-fed, and carefully watched after inoculation: and the Home Office requires that, if an animal be in pain from an inoculation, it must be killed under an anæsthetic, so soon as the main result of the experiment has been attained.

Remember, that these inoculations, with a few other experiments of the nature of inoculations, are 95 per cent. of all experiments on animals in this country.

Altogether, 82,637 inoculations were made in 1909, in Great Britain and Ireland. Of these, more than 50 per cent.

were made for the study of cancer in mice. It has been found possible to protect these small animals, so that even if they be inoculated with the disease, it will not grow in them. Other facts also have been made out as to the nature of cancer, which could never have been made out without these experiments. The mice that are kept for them are well-fed, sleek, in good general health, and able to breed. It is only in a minority of them that the growth under the skin becomes large enough to impede their movements, or to make them ill. If the skin breaks, so that the tumour becomes painful, the mouse is killed.

The next most frequent use of inoculations is for the study of consumption, and for the testing of milk, to see whether it is free from the germs of tubercle, which are the cause of consumption. These inoculations are made on guinea pigs, or sometimes on rabbits. At the Lister Institute, for example, samples of milk, sent by order of the London County Council, are tested on guinea pigs. We all know that a tuberculous gland gives no pain to one of us, unless it becomes inflamed. What does not give pain to us, will not give pain to a guinea pig.

Many other inoculations are made, for the sake of the national health, by official bodies, or by the Government. Municipal Corporations, County Councils, and Royal Commissions, all make experiments on animals. So does the Home Office, the War Office, the Colonial Office, the Board of Agriculture and Fisheries, the Metropolitan Asylums Board, and the Local Government Board. If you think it reasonable to use the word "vivisection" for these inoculations, you must say that the Government "vivisects" a great number of animals. For example, during 1908, no less that 12,500 experiments were made on behalf of the Royal Commission on Sewage Disposal. These experiments were made on fishes, or on the eggs of fishes. The young fishes, and the eggs, were used to test the purity or impurity of water. Under the present Act of Parliament, every one of these 12,500 observations, on fishes and their eggs, is reported to the Home Office as an "experiment on a living animal calculated to cause pain." Then the Antivivisection Societies cry out, "Look at the increase in the number of vivisections in England!"

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Form B 3.

July, 1910.

Research Defence Society.

THE TRUTH ABOUT VIVISECTION.

III.

EXPERIMENTS DURING 1909.

Nobody in this country is allowed to make experiments on animals except under a licence. Every application for a licence must be signed by two authorities, and must state the nature of the proposed experiments. This application is very carefully considered by the Home Office and its advisers before permission is given. The notion that any medical student can obtain leave to make experiments on animals is absolutely false. The working and the administration of the Act are strictly guarded, so that every precaution may be taken against any sort of cruelty to animals.

Every year, the Home Office publishes a Report of the experiments made in this country during the previous year. You can get this Report, for sixpence, from Wyman & Sons, Fetter Lane, London, E.C., or through any bookseller. The report for 1909 has lately been published.

The vast majority of experiments on animals at the present time are inoculations, or of the nature of inoculations. During 1909, no less than 95 per cent. of all experiments in Great Britain and Ireland involved no sort or kind of operation on the animal. Inoculations are made mostly on mice, rats, guinea pigs, or rabbits. It is not once in a thousand times that they are made on the higher animals. In a very large number of inoculations the animals suffer no pain at all. If pain follows an inoculation, the Home Office requires that the animal shall be killed under an anæsthetic so soon as the main result of the experiment has been attained.

All experiments must be made in special places registered under the Act, and open to Government inspection. But a few

inoculation experiments were permitted in places not registered, so that, for example, outbreaks of disease in remote districts might be studied. The total number of persons licensed was 483 in England and Scotland and 21 in Ireland. But 138 of them made no experiments in 1909. Experiments of the nature of "vivisection" are only 5 per cent. of all experiments in this country. In every experiment of this kind, the animal, during the whole of the experiment, must be under an anæsthetic, and, if the pain is likely to continue after the effect of the anæsthetic has ceased, or if any serious injury has been inflicted on the animal, it must be killed before it recovers from the anæsthetic.

In most of these experiments made under an anæsthetic, the animal is killed then and there, under the anæsthetic. It knows nothing of what is being done to it; it has no pain at all; it dies in its sleep. None of us can reckon on a death so easy as that. In some cases the animal is allowed to recover from the operation under the anæsthetic, and is kept for observation. The operation must be done by the antiseptic method, as it would be done by a surgeon on a patient. If the wound does not heal well, and matter is formed, the animal must be killed. After the healing of the wound the animals are not necessarily, or even generally, in pain. Thus, experiments for the removal of some organ of the body, or for the removal of a part of the brain, may be made without pain. No observations of any kind which might cause pain are allowed to be made after the operation, unless the animal is again placed under an anæsthetic.

In these operations on animals the arrangements, and the general methods, are much the same that you find in Hospital. For example, a dog or a cat would not be tied down, and then have the anæsthetic. It would have the anæsthetic given to it while it was in a box; and then, when it was asleep, it would be tied down. After the operation, it would be kept warm in a basket till it came round, as we do after an operation. If things were not very carefully done, the experiment would fail, and come to nothing. For instance, if the animal were struggling, it would be quite impossible to make any delicate experiments, or to observe anything properly. Again, if the animal were allowed to recover from the anæsthetic, but were not properly watched and cared for, then the observations made on it might be worthless.

The animal, when it is unconscious, is tied down, not to prevent it from struggling, but for this very simple reason, that animals cannot lie on their backs as we can. The animal

must therefore be kept steady on its back, so that the experiment may be done while it is asleep under the anæsthetic.

The total number of experiments made during 1909 in Great Britain was 86,277. In Ireland 284 experiments were made. Out of these 86,561 experiments, more than 82,600 were inoculations or of the nature of inoculations. It may fairly be said that in the vast majority of these inoculations there is either no pain at all, or nothing more than what may truly be called trivial. And, of course, these inoculations are made not only for the study of diseases in us, and for the discovery how to find ways of preventing or curing such diseases, but they are also made by Government Departments, Municipal Councils, and other public bodies in the interests of the national health. There is hardly one department of the national service which may not require the help of such experiments on animals. It is by the help of these experiments that our country is protected against the invasion of Asiatic cholera, or of bubonic plague. Again, it is by the help of such experiments that the workers in dangerous trades, such as mining, wool sorting, manufacture of pottery, and so forth, are protected. Again, the proper control of the milk supply, and the sanitary precautions against typhoid fever, depend to a very considerable extent on experiments on animals.

Thus, it is *you*, really, who are the "vivisectors." Inoculations are made by order of *your* County Councils and *your* representatives in Parliament: they are made, as it were, by *your* request, and *you* help to pay the men of science who make them for you.

Take, for example, what happened not long ago in London. They found some dead rats lying about, at one of the Docks: and, as no rat poison had been laid down, they sent some of them to Dr. Klein for examination. He suspected that they had died of the plague: so he inoculated two guinea pigs and a mouse, from one of them, and found that his suspicion was correct. Then there was a rat-hunt, and they got about 250 rats, some alive, some dead: and they found that nearly half the number had indeed got the plague in them. That is the sort of way in which the men of science, by the help of experiments on animals, look after you.

Or take the work that has just been done, to find out the exact way in which the work-people in the potteries get lead poisoning. By the help of a very few experiments on cats, they have found out, better than they knew before, how the lead gets into the system; and thus they are better able to guard the workers against that evil.

Or look away from this country, to what is being done in Khartoum. They are studying, at the Gordon Memorial College there, certain diseases which are terribly common in Africa; especially the sleeping sickness, in men and in animals. The horrors of this disease are past all telling: it has destroyed more than fifty thousand natives, torturing them for weeks or months before death puts them out of their misery. It has destroyed, also, we know not how many horses, mules, and cattle, in the Gambia Territory, the Uganda Protectorate, and the Soudan. It is one of the worst of all scourges. The anti-vivisection societies have a picture of a dog, which was inoculated for the study of this ghastly disease. But what of the legions of horses, mules, and cattle, that perish? What of the legions of men, women, and children, that perish? Is it not right, is it not humane, to study the disease by the only way which gives us any hope of finding a cure for it?

Or take what is known about tetanus (lock-jaw). It was all made out by experiments on rabbits. By these experiments, the men of science were able to discover a new treatment for this awful disease: but, at present, they are not satisfied with it, and hope to improve it. Shall they, or shall they not, go on with their work? If you have ever seen a man dying of lock-jaw, you will know how to answer this question.

Or take the discovery, at the Rockefeller Institute in New York, of a new way of treating epidemic meningitis. This discovery was made by experiments on monkeys. It has brought down the mortality of this torturing disease from 70 or 80 per cent. to 30 or 40 per cent. Was it wrong, or was it right, to inoculate some monkeys, and thus to find a way of saving men, women, and children from agony and from death?

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The Hon. Secretary, 21, Ladbroke Square, W., will gladly receive applications for membership or associateship, answer all enquiries, send literature, and make arrangements for addresses and lantern lectures, etc.

Form B 4.

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70, Harley Street,
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THE TRUTH ABOUT VIVISECTION.

IV.

CHARGES OF CRUELTY

against the Rockefeller Institute.

Three affidavits, alleging acts of gross and senseless cruelty to animals at the Rockefeller Institute, were published, by the help of the New York Anti-vivisection Society, in the *New York Herald*, December, 1909. These affidavits have been widely circulated by more than one of the Anti-vivisection Societies in England.

A full enquiry has been instituted into them with the consent of the authorities of the Institute.

The Committee of the Research Defence Society desire to call your attention to the following statements, which clearly show these affidavits in their true light.

I.

New York Times, Jan. 17, 1910.

By Dr. Flexner, M.D., D.Sc., Director of the Institute.

Within the last few weeks an effort has been made by the New York Anti-Vivisection Society, by charging it with wilful cruelty, to discredit the Rockefeller Institute for Medical Research, and through and with it other institutions in this country in which animal experimentation is being employed to extend our knowledge of human and animal diseases.

I wish to state with all the emphasis and definiteness that I can place upon the words that cruelty is not practised at the Rockefeller Institute, and would not be tolerated. I wish also to state, with the same emphasis, that no concealment is practised there, but that the results of its work are

published in full detail to the world, and qualified persons are freely admitted to witness the experiments. It is, moreover, an imposition upon a lay public, uninformed, and properly so, of the methods of the hospital operating room, to parade as wanton cruelty when applied to the brute creation the very means which are in daily use to save life and limb in the best hospitals in this country and Europe.

The character of the witnesses employed by the New York Anti-Vivisection Society to make the charges of cruelty may be gathered from the following facts: The Kennedy woman, the chief witness relied on, was employed as a scrub-woman. The men Dutton and Smith, the other witnesses, were ex-employés discharged for sufficient cause. Since the Kennedy woman stated under oath that the employment in the operating room was very distasteful to her because of the cruel way in which the animals were treated, it is of some importance to learn that she secured, surreptitiously brought to the Institute in a bag, and offered for sale for 35 cents, to be used for experimental purposes, the pet cat of her neighbour, and when rebuked by Miss Lilly, the trained nurse, on the ground that the act constituted a theft, she attempted to exculpate herself by saying that, as the cat strayed into her rooms, she had a right to it.

The true value of the so-called damaging testimony against the Rockefeller Institute is, however, further exhibited by a statement, in my possession, made under oath by an ex-employée, to the effect that Mrs. Kennedy, accompanied by two other women, visited her, endeavoured to make her say that she had witnessed cruel treatment of animals at the Institute, and offered her $100 for information, and that one of the women showed her the money in a bag.

The purpose of experimental surgery being the extension and perfection of the art of human surgery, it is inconceivable that any but the most precise and perfect means would be employed in the care and treatment of animals used for experiment. In Dr. Carrel, the Rockefeller Institute has had the rare fortune to get a highly distinguished surgeon to carry on this phase of its work. The Institute spares, indeed, no expense and pains in providing for the care and comfort of the animals employed there, and the provision made for the animals will compare favourably with the provision made in the leading hospitals for the care of human patients.

The scientific staff of the Rockefeller Institute has been chosen from among the distinguished scientists in America and Europe. The different universities are the training schools for the staff of the Institute. The themes upon which the workers

are engaged demand a degree of precision and care that is difficult or impossible of description, in order that the results of the experiments may be trustworthy and valuable. Any roughness or carelessness would spoil the experiment and nullify the result.

I desire, therefore, to deny totally the statements of cruelty made in the affidavits of Mary L. Kennedy, Samuel Francis Dutton, and Matthew Smith, and to state unqualifiedly that the allegations are false, ignorant, and wilfully misleading.

II.

New York Times, Jan. 18th, 1910.

It is pathetic, from one point of view, and outrageous from another, that men like Dr. Flexner and his associates in the Rockefeller Institute should be disturbed in their infinitely important labours and forced to waste their time and strength in self-defence, simply because a little group of fanatic zoöphilists have found a means of bringing before that part of the public which is both thoughtless and ignorant some charges of cruelty made by a scrubwoman and two male servitors of like competency to decide scientific questions.

It should not have been necessary for Dr. Flexner to dignify these accusations with a denial. As he says, they were absurd on their face, being refuted in part by the fact that the work done at the Institute would not be possible in the conditions described by these impudent critics, and in part not accusations at all, but merely an account of the sensations invariably produced, by the routine doings of surgeons, on minds incapable of seeing in them anything except the incidental mutilation of living bodies. Dr. Flexner probably realized, however, that, whatever may have been the motives of the new attack upon animal experimentation, there was danger in letting it pass unnoticed. . . . .

Therefore has he told, plainly, but without heat, the facts of vivisection as he knows them, and as everybody ought to know them before venturing an opinion of its propriety or its necessity. He has told, too, the sort of people by whom the latest sensation was started, the causes of their suddenly developed tenderness of heart, and the methods they have used in seeking support for their calumnies. His statement ought to end the whole discussion, but there is little hope that it will do so, since reason is not a faculty of the anti-vivisection mind, and facts have no weight for it. No sane person, however, will give any further attention to this particular set of myths and apprehensions.

The charge of the anti-vivisectionists that cruelty is practised at the Rockefeller Institute of Research is unequivocally denied by Dr. Simon Flexner, who is at the head of that institution. He affirms that the animals which are subjects of experiment there are treated with as much consideration as human patients in hospitals, partly, no doubt, from mercy, but also, he says, because the success of the work done at the Institute largely depends on the avoidance of roughness and carelessness. Dr. Flexner is a man of the finest personal character, as every physician who has met him will testify, and he is in a positiou to know precisely what he is talking about. On the other hand, it does not appear that the officers of the organisation which has attacked the Rockefeller Institute even profess to speak from their own observation or knowledge.

III.

New York Evening Mail, Dec. 29th, 1909.

"Frank Dutton was a porter who worked under my direction. He had been a waiter at one of the big clubs, and through Dr. Janeway he was given a job at the Rockefeller Institute. I have read his affidavit, and, basing my judgment on my observations during my three years as head animal man there, I can only say that his conclusions are wrong and his statements not always those of fact."

This statement was made to the *Evening Mail* to-day by Max Sloman, superintendent of Bartel's animal farm, at West Park, Jersey City. From October 5th, 1906, to November 15th, 1909, Mr. Sloman had charge of the animal house at the Rockefeller Institute, Sixty-Sixth Street and Avenue A, this city. He purchased all the stock, sometimes having as many as 5,000 creatures under his care.

Mr. Sloman is a lover of animals. During the last twenty-five years he has visited every continent except Australia to buy animals.

"During the time I was with the Institute," said Mr. Sloman, "I never once saw or heard of anything being done in a cruel manner. Never did I hear an animal cry out in pain.

"I never heard of an animal being operated upon without being under an anæsthetic. In fact, it could not be done otherwise, for the animal's struggles would prevent the surgeon from working.

"Off the operating room is a sterilizing room, and one in which the ether is administered. No one is permitted to pass

from one room to another during an operation. The surgeon and his attendants are masked and clad exactly as at the most modern hospitals.

"After operations all living animals were returned to me, and, while I won't say they never suffered pain, I will say that everything was done to ease it.

"Samuel Francis—we knew him only as Frank Dutton—never, to my knowledge, assisted in operations, as he claims. He was at the Institute only seven months, all told, as an assistant to me.

"He was merely a porter and never, to my knowledge, was in an operating room during an operation.

"The statement that he has found living animals in the refrigerator is foolish. Every day my first duty was to go the rounds of the cages to discover the condition of the animals. Each cage is marked with the name of the surgeon who has used its inmate, and cases of death were at once reported to them.

"The value of the experiment demands that the surgeon learn by *post-mortem* examination the cause of death. This autopsy would make death certain, if it had not already taken place.

"Regarding Dutton's 'humanitarian' work in 'saving' dogs by seeking their owners in the lost and found columns, he had a double incentive. Possibly the strongest was the reward which often is offered by owners for lost pets. The other was strict orders from headquarters to do just that.

"Most of the dogs were obtained from volunteer dog catchers, who were paid 25 to 50 cents each for them. Our strict orders were to watch the papers and notify advertisers to call if we have reason to believe we had their pets. In this way hundreds of dogs have been returned. I never knew an owner to be asked to pay us what we had paid for the dogs."

IV.

New York Times, Feb. 8th, 1910.

By Professor LEE, Columbia University.

There has been held in this city during the past ten weeks a public exhibition purporting to demonstrate the methods that are employed in laboratories of animal experimentation. It is held under the auspices of the New York Anti-vivisection Society, an organization which for the past two years has endeavoured in various ways to keep itself in the public eye. The exhibition has attracted less attention from the public than

it deserves, for, while its scientific character may be questioned, it is valuable as affording a clue to the moral character of an organization which lays claim to a position of moral leadership. There are some of us who have entertained grave doubts as to whether this claim is justified, and these doubts have increased as the various successive acts of the society have been performed since the day of its birth. A study of its exhibition tends to increase these doubts.

The most graphic feature of the exhibition is an array of stuffed animals, some attached to operation tables, some with heads attached to surgical head-holders, some in partial dissection, with surgical instruments lying about, and in one case with a pool of red liquid, simulating blood. The good taste manifested in the public showing of such gruesome sights may well be questioned, and especially in view of the fact that a considerable number of the visitors which one sees at the exhibition are children. They are not only welcomed and allowed to roam freely about the room, but the unpleasant details of the exhibits are explained to them by the women attendants in charge, and a morbid curiosity is thus encouraged. The walls bear many pictures of animals, some undergoing luridly red surgical operations, some exhibiting anatomical dissections, and others participating in a variety of scenes of happiness or misery. The investigator is now and then shown, with a face of diabolical glee, gloating over his victim. A considerable number of portraits of men are shown, chiefly literary men and clergymen, with extracts from their writings, expressing more or less opposition to animal experimentation. In many cases these expressions are direct responses to requests by members of the society, and their language shows the degrading influence of the literature circulated by the Society.

A significant part of the exhibition consists of the tales that are told to the visitors by the women attendants. Of the various operations that are portrayed or suggested, one is frequently told that they are customarily performed without anæsthetics, a statement which is not true. One attendant said to a visitor that the surgical head-holders were used for the purpose of breaking the jaws of dogs, and that this was done without anæsthetics. When questioned as to the reason for breaking the jaws of dogs she confessed ignorance. Such a procedure is so patently fantastic as to render comment unnecessary. There is an oven, heated by gas burners, which contains the stuffed body of a rabbit, and which the attendant tells you is used for the purpose of baking live animals to death, and that this also is performed without anæsthetics. Fabrication

and grotesqueness here reach their culmination, for the oven is an apparatus intended for the incineration of dead organic matter, the anatomical refuse of a laboratory! The attendants are ever ready to discuss animal experimentation, seemingly quite unaware of their great and prejudiced ignorance. They do not hesitate to speak of well-known and highly respected scientific men in intemperate language that is anything but refined or parliamentary.

To one who is familiar with laboratory procedure, the key-note of this exhibition is falsity. The visiting layman can hardly fail to carry away with him a wholly incorrect notion of what animal experimentation means, what its methods are, and what a measureless amount of good it has accomplished for both the human race and the lower animals. Nowhere is there a sincere desire for the truth; everywhere there is ignorance, misrepresentation, and false implication; everywhere the calmness of balanced judgment is wanting; everywhere there is an unbridled appeal to sentiment, and to sentiment inflamed into passion. The harm is great that may thus be done to the individual, but when such an influence is allowed to spread unchecked through a community the harm that may be done to the multitude is incalculable. Such an influence is both intellectually and morally debasing. When a Bishop of a Christian Church, innocent of the truth and moved only by a blind rage excited by the misleading tales of this society, writes of the beneficent method of animal experimentation, a method from which he and his followers unwittingly derive daily blessings, "I have long been an enemy to vivisection, and am so still. * * * I would like to see it totally abolished and made an offence against the law. * * * I am heartily in sympathy with the effort, not only to reform, but to destroy and root out altogether this sin against the lives of innocent creatures," we may well ask whether the time has not come for enlightened people to band themselves together in opposition to this variety of fatuous fanaticism.

In the exhibition of which I write the most striking single exhibit is the New York Anti-Vivisection Society itself. It has had every opportunity to learn the truth or the falsity of its demonstrations and its declarations. It has been told by those who know how untrue they are, and yet it has continued week after week to keep its deceptive sights before the public and to tell its false tales. In the minds of those who both know and respect the truth the New York Anti-Vivisection Society stands, under the deceitful mask of a pretended moral leader, as an obscurantist, a partisan of vicious principles and practices, and a foe of the public good.

V.

Evening Standard, Jan. 5th, 1910.

As the result of the publication in the *New York Herald* of sensational charges of cruelty in the treatment of animals used in inoculation and vivisection at the Rockefeller Institute in America, a committee of the Society for the Prevention of Cruelty to Animals is to investigate the conditions alleged to exist. The initiative in the matter has been taken by Mr. Jefferson Seligman, the well-known banker, who, however, evidently doubts if the existing state of affairs is as bad as has been made out.

"The question of vivisection has been agitated in public for years," he says, "and it is time it should be settled. At the same time, persons who have used animals cruelly should be punished.

"I am very much in favour of an open door—of letting an appointed committee see exactly what is going on in the methods in use in vivisection.

"As regards the Rockefeller Institute, I want to say that I visited the institution several days ago, being taken through by Dr. Flexner. I spent two hours in the place, and found it a model institution, where everything was being conducted in a splendid way. All the animals were shown to me, and I saw no evidence of cruelty. I felt sure they were all being well treated.

"We must advance in science. We cannot stand still. The question of the human race is all important, and vivisection must be carried on. but it must be practised in the proper way."

VI.

Standard, Feb. 10, 1910.

In the course of a conversation with Dr. Osler, the Regius Professor of Medicine at Oxford, a representative of *The Standard* made inquiries as to the truth of the allegations of cruelty made both in the United States and in England against the conductors of the Rockefeller Institute. Dr. Osler, who is keenly appreciative of the work done at the institute, was most emphatic in his condemnation of the charges which have been levelled against the eminent medical men who have been accused of gross cruelty to animals. Such charges, he declared, were quite baseless. All experiments on animals are conducted with every precaution to avoid the infliction of pain, and the direct result of these experiments has been the alleviation of a vast amount of human suffering.

Form B 5.

February, 1910.

Research Defence Society.

THE TRUTH ABOUT VIVISECTION.

V.

FIGHTING THE INVISIBLE.

Medical science of to-day is not only busied in the cure or alleviation of pain and sickness; a large part of its energies is devoted to the prevention of illness. This is a most interesting side of the work, and a visit to a place like the Lister Institute of Preventive Medicine gives one some idea of the constant war waged against those minute disturbers of our peace—the microbes of disease.

Having written to ask if I could be shown over the Institute, and having received the reply that the authorities are always glad to show it to the public, I went down one afternoon to Chelsea Bridge Road. It is as well to make application beforehand when contemplating visits like this, as then one is sure of coming at a convenient time.

The Secretary made me welcome, and asked me to wait while he fetched one of the medical workers. One of the assistant bacteriologists soon returned with him, wearing the long white laboratory coat which all the workers wear.

He took me at once into one of the laboratories, a long light room. A broad shelf ran round it under the windows, and long tables occupied the centre of the room, On

them and on the shelf were bottles and flasks and numbers of test tubes, their mouths stopped with cotton wool, and many of them containing bacilli.

My guide had been doing work with diphtheria bacilli, and he now showed me how a microscopic diagnosis is made. The doctor attending the case takes a "swab," *i.e.*, wipes out the patient's throat with a tuft of perfectly clean cotton wool. This is then put into a test tube which has been sterilised ; and, before and after putting in the swab, the mouth of the tube is passed through a flame to be sure there are no extraneous germs there. The same is done with the tuft of wool with which the mouth of the tube is corked, and the tube, before the "cork" is put in, is held with the mouth pointing down in a sloping position, as then no dust will pass up to settle on the swab in the tube.

When the swab arrives at the Institute it is rubbed on the surface of the culture medium in a test tube. This material is heated and solidified serum, *i.e.*, the colourless part of blood. The tube is then placed in an incubator. There were several of these standing against the wall, and my guide opened one of them and showed me the rows of tubes standing up, each with its growing microbes. If one thinks of it, the amount of disease germs contained in that small space is rather awful, but this did not occur to me then. The thing looks so innocent, just a glass tube stopped with white cotton wool, with a little cloudy looking stuff at the bottom. The incubator is kept at the temperature of 37° C. (98 Fahr.), and in 24 hours the tube is taken out.

Serum is used for this operation because the diphtheria bacillus grows best on this culture medium. Gelatine, though a favourite with some microbes, would melt at the incubator temperature, which is that of blood heat, the most favourable temperature for the growing of disease germs.

My guide then took out one of the tubes, and, taking a platinum wire fitted into a handle, passed it through the flame, for the reason given before, and with it scraped

off a little from the surface of the serum in the tube. He then rubbed it on a microscope slide, and poured some dye on the slide, and allowed it to stand for a minute or two. He then poured off the dye, rinsed the slide under a tap, and placed it under a microscope so that I might see the results.

The dye used was violet, and it was most interesting to see the little colony of stained bacilli, for the serum does not take the dye.

He showed me a second slide, a better one, in which the bacilli were more separated. The diphtheria microbe —Klebs-Loeffler bacillus, as it is called, after the two doctors who first discovered and isolated it—is like a tiny slightly curved rod, with three bars on it which stain a deeper colour than the rest.

I asked if the bacilli in the tubes were alive. "Oh, yes," answered the doctor, "but they can't get out through the cotton wool; and, anyway, grown like that, they lose a good deal of their strength."

Of course the presence of the diphtheria bacillus in a culture from a patient's throat is a conclusive sign that the case is one of diphtheria, and one can easily understand the usefulness and importance of this method of diagnosis.

Bacilli in a *liquid* culture-medium grow all through it, and it is sometimes desirable to collect them all at the bottom of the tube, leaving the medium clear above. For this a centrifugal machine is used, the tubes are placed in it, and the machine being set going, all the bacilli are driven to the ends of the tubes. One would not suppose that such exceedingly minute things could weigh anything at all, yet it is because they have a certain amount of "weight," if one can call it so, that they are driven to the outside by the centrifugal motion of the machine.

For the manufacture of anti-toxins larger cultures are required. These are made on glass plates, spread with agar, a kind of jelly made from seaweed, which melts at a much higher temperature than does ordinary gelatine. The

plates are first sterilized by being put into a furnace, and kept for half-an-hour at a high temperature. Then some of the culture in one of the tubes is removed with the wire and rubbed on the plate, which is then put into the incubator, where the microbes grow rapidly in the congenial warmth. The cultures appear as little buff-coloured patches in the jelly.

We next went into another laboratory where such work as the diagnosis of typhoid cases is done. Suppose a doctor has a case, and cannot be certain if it is one of typhoid or not, this disease being often very difficult of diagnosis. He takes some blood from the patient, and sends it up to the Institute. Here the specimen is diluted with saline solution, mixed with bacilli, and put into an incubator as described before. Then, when examined under the microscope, the microbes are seen collected together in clumps, if the case is one of typhoid : for the blood of a patient in this condition posesses a property which makes the bacilli crowd together. This "clumping" quality persists for some time in the blood in the patient's body.

There is also a cold room at the Lister Institute where bacilli can be kept at a temperature which, although it is not cold enough to kill them, yet prevents them growing. The room is a tiny one, dark except when the electric light is switched on, and to go into it was like walking into a winter day. On the shelves were many tubes in which were dormant bacilli.

We went into yet another laboratory where the different culture media are made in which the bacilli are grown. Here were ranks of tubes, each corked with cotton wool, the wool differing in colour according to the exact composition of the gelatine, serum or broth contained in the tube. I was here shown two large glass flasks containing horse's blood, from which the serum had been drawn off to make culture media, and only the clot remained. The manufacture of anti-toxins is one of the "industries" of the Lister Institute : but unfortunately I could not see the process, as the farm and the laboratories connected with it are at Elstree.

The usefulness or otherwise of these anti-toxins, and especially of that for diphtheria, has been a fruitful subject of debate. The anti-vivisectionists are constantly denouncing them as useless, dangerous, and in every way objectionable, but those who have had practical experience of their results think differently. A doctor, who had worked a good deal with diphtheria anti-toxin, spoke strongly in its favour when I questioned him on the subject, and my guide round the Lister Institute also thoroughly believes in it. Before taking up his present work he had a general practice. One day he was sent for to see a labourer's child, whom he found suffering from diphtheria. The anti-toxin treatment had just come in, so he gave the child an injection. Six hours later, that night, he was again summoned as the child was choking. So he took his instruments, and went, expecting to have to do tracheotomy. However, though the child was suffocating, the parents would not allow the operation. The first injection of anti-toxin had not had time to work, but the doctor helped it with a second, as the only thing left him to do, and returned home. He called again in the morning, more as a matter of form than anything else, for he quite expected the child to be dead. But it was by no means dead, but sitting up in bed much better, having coughed up the membrane : for, as he explained to me, that is one way in which the anti-toxin works, loosening the membrane so that it can be coughed up and got rid of.

To put it simply, the principle of anti-toxin is this. If an animal, in this case a horse, is inoculated with a mild dose of diphtheria virus, a substance is formed in its blood which overcomes the poison or toxin of the disease. The slight malaise induced by the inoculation soon passes off, and a stronger dose is then given, which causes more of the anti-toxin to be manufactured by the horse's system. The dose is thus continually increased till the horse can stand, unaffected, a dose many times stronger than could be borne by a fresh animal. It has been found by experiment that the blood of an animal in this condition is capable of protecting other animals also against the diphtheria virus. When the horse has received sufficient virus, a quantity of its blood is drawn off into a sterilized vessel, allowed to stand, and

the clear part, or serum, which separates when clotting takes place, is put up in little sterilized flasks, with a drop of antiseptic in each, lest any microbe should have managed to insinuate itself.

It should be understood that the inoculated horse does not have to go through a number of attacks of diphtheria, the effect of the inoculation being merely some soreness at the point where the needle was inserted, with a rise of temperature and a feeling of unwellness which soon passes off. The horses are specially selected, as being perfectly sound and healthy, are well fed and cared for, being housed in roomy loose boxes, and are regularly exercised.

A great deal of the work done at the Lister Institute consists in the testing of samples of milk to see whether it contains the germs of tuberculosis. This disease is painfully rife among children ; it is also common among cattle, and may exist, quite unsuspected, in a cow, whose milk, drunk by a child, will probably infect that child. It is most important to detect any infected milk, so the authorities seize samples at the railway stations, where it arrives in London, and send it to the Lister Institute to be tested.

No mere microscopic examination will do here, the bacilli are exceedingly minute and difficult of detection, so another test is used.

A little of the sample of milk is inserted under the skin of a guinea pig with a hypodermic syringe, and the animal is kept by itself for about four weeks, being watched carefully. If it becomes ill, or at the expiration of the time, it is killed and examined. If tuberculosis is found, the Medical Officer of Health is notified, and the farm from which the milk came is traced out. The cows on the farm are examined, tested by an injection of tuberculin, and if any are infected they show it by the rise of temperature which follows the injection. Unfortunately, at present, the authorities have no power to slaughter the diseased cow, but the owner can be forbidden to send any more of her milk to London.

"You had better come and see our animals," said my guide. So we went downstairs and out into a back yard.

Here are rooms, lined with cages of varying sizes. I was astonished at the number of guinea pigs. These creatures are the most extensively used, being cheap and convenient. The cage floors were covered with peat moss litter, and the animals looked sleek, healthy and clean. They were also tame, the rabbits being quite willing to have their noses stroked, while a sleek black cat put a long slim arm out through the bars to paw the doctor's hand, and rubbed her head against his fingers as he petted her. He pointed out to me his own particular rabbit, a big grey one, on which he had been doing some blood experiments; it looked down at us from its cage as it industriously munched its oats. Many of the guinea pigs were new, and had not been "used," but some in round cages in the centre of the room had had something done to them, as was shown by the little metal studs attached to their ears, which, I may mention, did not seem to annoy them at all. One very sleek black one looked at us out of its beady eyes; it had been inoculated with something, the doctor could not say exactly what, as it was not his guinea pig.

In another room were more rabbits, in small cages. These had been "used": but their only interest seemed to be the meal which had just been supplied to them. Above, were four or five monkeys in cages, eagerly devouring apples which a boy was serving round to them. They were all beautifully clean, nor did I notice that objectionable smell which is so unpleasantly present in the monkey-house in a Zoo: and the hutches of many pet rabbits are by no means so clean and sweet as are the cages of these laboratory animals.

We then went into another room, in which were some round iron cages. In one of these I was shown two guinea pigs which had been inoculated with some milk as before described; they were now under observation. The date of inoculation, June 27th, and that for examination, July 21st, were written on a label attached to the cage. So far the creatures showed no sign of ill-health but were fat and well.

The only thing I could see with which anyone could reasonably find fault is that some of the cages are rather small, but this is probably owing to lack of space.

"No one," said the doctor, as we went back into the building, "who has seen a child dying of tubercular meningitis would have any scruples about using guinea pigs as we do. It means three weeks of suffering for the child, and is a ghastly thing."

There is certainly a strong case in defence of using animals as they are used at the Lister Institute. The work is most important. The actual inoculation is the prick of the needle, which, even when driven deeply in, is nothing to worry about, as I know from experience: and, as to after suffering, when the creature shows signs of illness it is destroyed. But some will not see it in this light; an anti-vivisectionist said to me—referring to the use of animals for testing milk—"Don't you think it's rather a horrid thing to do?" But it would be much more "horrid" to let little children drink milk infected with deadly microbes when there is this way of detecting them. And I think that the men who are spending their time in thus saving humanity may fairly demand that those who find fault with their methods should justify their objections by providing some other means, equally efficacious, of doing this work.

EVA RICHMOND.

RESEARCH DEFENCE SOCIETY.

Founded in January, 1908, to make generally known the facts as to experiments on animals in this country, and the regulations under which they are conducted; the immense importance of such experiments to the welfare of mankind; and the great saving of human and animal life and health which is already due to them.

The Hon. Secretary, 21, Ladbroke Square, W., will gladly receive applications for membership or associateship, answer all enquiries, send literature, and make arrangements for addresses and lantern lectures, etc.

THE "TRUTH ABOUT VIVISECTION" SERIES.

1. Diphtheria and Antitoxin.
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7. The National Welfare.
8. The Brown Dog.
9. A Question of Religion.

Other tracts in this series are in course of preparation.

Form B 6.

March, 1910.

Research Defence Society.

THE TRUTH ABOUT VIVISECTION.

VI.

WHAT THE DOCTOR SAYS.*

The object for which the Research Defence Society exists is a very simple one. It is for the purpose of explaining facts, and of removing misunderstandings, in reference to a particular kind of scientific investigation, namely, that which has to do with experiments upon living animals.

Now in any matter of controversy it is important to ascertain, if possible, what is the basis of agreement from which the disputants start: and in regard to the present subject there is not much difficulty in demonstrating that there is a very wide basis of agreement.

Among Western Nations at any rate, man is accustomed to make use of the members of the animal kingdom below him in a great many different ways; and there is no important divergence of opinion as to the question whether he is or is not justified in doing so. Thus, if we may exclude the comparatively small number who object to the consumption of meat from hygienic considerations, we find an almost universal approval of the slaughter of animals for food, in spite of the undeniable

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A speech by Dr. R. J. Ryle, at the Public Inaugural Meeting of the Brighton and Sussex Branch of the Research Defence Society, Dec. 13th, 1909. The meeting was held in the Royal Pavilion, Brighton. The chair was taken by the Earl of Cromer President of the Society.

fact that the killing of animals upon this enormous scale must involve, in the aggregate, a very large amount of suffering. Again, few will be found to object to the destruction of dangerous or noxious animals, even though their extermination cannot be brought about without employing painful modes of death.

If a town were in danger of invasion by plague-infected rats, no doubt the populace would gladly subscribe for the services of some pied piper of Hamelin to hurry the rats into the nearest river; but if such a way of escape were not available they would not hesitate to make free use of any efficient poison which might be suitable for their purpose.

Again, if it is found to be necessary, for the common purposes of the farm or stable, to perform painful operations upon domesticated animals for the financial advantage or for the greater convenience of man, the operations are performed; nor does it appear that any organised attempts have ever been made to bring about their general prohibition. And, if we wish to observe how man secures his own convenience and advantage at the cost of pain and considerable inconvenience to some of the higher animals, we have only to consider the life of the common cab-horse, and to remember that bits, spurs, and whips have all a definite value to the human race only because they are means by which we may secure discomfort or pain to the horse when it suits our purposes.

There remains one other department of man's conduct towards the lower animals, which ought at least to be alluded to: that of sport. Among those who are opposed to all investigation of biological problems by means of experiment upon living animals, there are found many who do not disapprove of sport, although sport implies much infliction of pain, while there are some who discountenance sport upon that ground. And, if we turn to the members of the Research Defence Society, we shall probably find that among them too there is for the most part no common disapproval of sport, but that some (among whom the present speaker would include himself), would either condemn, or at least prefer to avoid, those amusements of

which the slaughter and suffering of animals constitute an inseparable part. Such, it may be remembered, was the attitude of the celebrated embryologist Francis Balfour, and it was that of Charles Darwin toward the end of his life.

We see then that to a very large extent civilised people are agreed about the use which is made by man of the lower animals. With but few to gainsay him, he may replenish his table or his purse; he may protect himself against various dangers and inconveniences, and he may provide for himself excitement and amusement in his leisure hours at the inevitable cost of much suffering endured by many thousands of animals.

At what point then does disagreement begin? The answer is a strange one. It only begins when man proposes to make some use of animals for the furtherance of his knowledge by the method of experiment.

Now there can be no doubt that a considerable part of the antagonism which those experience, who defend the use of experiments upon living animals in physiological and pathological research, arises from simple ignorance of what the word experiment means. To many people who speak with horror of "experiments," the word stands for nothing very definite, and, if it means anything, it does not mean what a student of science understands by it. They have allowed their hearts to run away with their heads. They have never stopped to enquire concerning the actual work of a physiologist, and they are apt to suppose that the experimenters are a set of inquisitive and rather mischievous people (generally it is believed that they are medical students) who, after catching a cat or rabbit, proceed to snip off a bit here or a bit there from the unfortunate animal, or to poke a red hot skewer into it, just in order to see what happens.

This is no travesty of the state of mind of very many of those who are quite ready to agitate or to legislate upon this subject, and such a representation of physiological work can only be described as nonsense. Any one who has ever worked in a laboratory, not necessarily in a physiological laboratory, but in any laboratory, in a chemical

laboratory, in a physical laboratory, or in an engineering laboratory, will tell you that this is not the sort of thing which is meant by the word "experiment." And physiological research by the method of experiment is like all other branches of experimental study, a mode of investigation, not random and haphazard, but deliberate, systematic, and definite. The general character and the logical significance of experiment ought to be brought home to those who have no personal familiarity with scientific work by the various writings upon the principles and methods of science which may be found in any good library, such as the "Novum Organon" of Bacon, the "System of Logic" of J. S. Mill, or the "Principles of Science" of Stanley Jevons.

The student of science does not operate at large "just to see what happens." His attention is confined to a particular group of phenomena. The elements which are concerned in the production of a given result are carefully discriminated and observed. If possible they are weighed and measured. Certain changes are carefully made, or new elements introduced. Disturbing conditions are watched for, and eliminated or allowed for. Results are scrutinised, distinguished, quantitatively estimated if possible, and the whole process from beginning to end is carefully recorded. More especially is it to be noted that experiments made in the physiological or pathological laboratory are experiments not made in the spirit of vague trifling, but with intelligent and definite purpose.

The experimenter is one who has before his mind some actual specific problem, and his work is directed toward a particular object. In experimental research, the experiments are a form of question, and the results of the experimental research are the answers which Nature gives to the experimenter's questions. Such is the only kind of experiment upon living animals which the Research Defence Society is concerned to defend. Is it too much to expect that a somewhat better understanding of what scientific experiment really is, will go far to dissipate the objections which are made against its use by those who have never known what the word means? And, in this country, such an improved understanding may be

strengthened by the remembrance that the experiments are made by licensed investigators only. Their work must be carried on in licensed places only, and only on certain prescribed conditions as to the use of anæsthetics in cases of experimental procedure likely to cause pain.

And now to turn to another aspect of this question. What have been the results of the employment of the experimental method of biology? and, more especially, have the practical arts of medicine and surgery received any benefit which can be traced to experiments upon living animals?

To ask this of a doctor is very much as though an electrical engineer should be asked if any "practical" good has ever come of the laboratory work of Galvani, Faraday, and Wheatstone. But the electrical engineer might not find it easy to explain to one who was destitute of any knowledge of electrical engineering what was the actual significance of this or that discovery for the applied science of the engineer, and those who undertake the work of Research Defence are in the same position.

Much of the research work is necessarily technical, and the application of its results to medical practice is naturally difficult of apprehension by those who have no acquaintance with either anatomy, physiology, or medical practice.

If however anyone wants to gain some understanding of what experimentation upon animals has done for man, without troubling himself much with technicalities, let him study the life and work of Pasteur in a good biography, and let him then ask himself: Have not these researches of Pasteur and his followers had something to do with the remarkable process of development by which our present day aseptic surgery has grown out of the older septic surgery? Or, let him ask himself whether the knowledge which we now have of malaria, yellow fever, and Malta fever, is not part of the heritage which has come to us from the same source. Again, if a result direct and intelligible is asked for, let him remember that of that large and important group of drugs which the modern public delights to administer with undiscriminating impartiality to itself

and its friends in the familiar "tabloid," there is hardly one of which the properties have not been carefully ascertained in the first instance by experiments on animals. In fact, nothing but such experiments can ever give the kind of knowledge and the precision at which we have a right to aim if we are to make the best use of our remedies in the treatment of disease.

These are modern instances. But there is never to be forgotten an even more fundamental and classical example of the use of the experimental method. It is one to which anyone may be referred who cares to read the record of a long and difficult investigation described by the investigator himself. The work of William Harvey on "the Movement of the Heart and Blood" has been to physiology what the work of Newton has been to astronomy. It has been to the art of medicine what the work of Newton has been to navigation. It has been the model upon which generations of other students have fashioned their own researches, and it forms the foundation on which the science of physiology, as we know it now, has been gradually built up. Upon physiology, which is the science of the normal process of activity in the organs of the body, rests pathology, and upon our pathology depends the extent of our power to understand and to control the course of disease.

In this great work of Harvey, experiments upon living animals played a leading part. Without them he could neither have exposed the misconceptions and errors of his predecessors and contemporaries, nor established his own doctrine. It is right to insist upon this, because some, who are not friendly towards the objects of the Research Defence Society, have rashly asserted the contrary, and have maintained either that he did make, or that he might have made, his discoveries without them. The point is one upon which anyone, who cares to do it, may easily satisfy himself by examining Harvey's own account of the matter: for his book is now universally accessible in a trustworthy English translation published in Dent's "Every Man's Library" series. Here we find an Introduction, in which certain experiments of Galen and others are described, and a concluding paragraph on the importance of "frequent appeals to vivisection and continual ocular inspection."

The first chapter of the book itself mentions vivisections in the first line. The second chapter has for a title "The movements of the heart as seen in the dissection of living animals." The title of the third is "The movements of the arteries as seen in the dissection of living animals." The title of the fourth is "The movement of the heart and its auricles as seen in the dissection of living animals." Finally, if any doubt remains as to the part which Harvey himself considered vivisection to play in the establishment of his new doctrines, we may refer to his two letters to the eminent anatomist Riolanus. These were written about twenty years later, and they show clearly that, in Harvey's opinion at any rate, the teachings of clinical observation and of anatomy alone were not sufficient to prove the truth of the views for which he had contended in his book.

But a further question remains. Supposing that we accept as proved all that Harvey claimed to have made out with reference to the functions of the heart and bloodvessels, can we allow that these discoveries, which were undisputably made largely by the use of the experimental method, were discoveries of value?

Is there any truth in the assertions which are freely made to the effect that, although some points of curious interest may have been brought to light by experiments upon living animals, there are none which bear upon the health and lives of men? Upon this question we have now nearly three centuries of experience during which the teachings of Harvey have been tested in practice, and there lives not now a trained physician or surgeon who has not constantly before his mind, in the ordinary course of his professional work, that picture of the movement of the heart and the blood which Harvey's teachings first made possible. Moreover, the whole of the rest of our knowledge of the working of the body has been built up and organised in connection with the discoveries which are associated with his name. All rational diagnosis and treatment presuppose their truth. The use of the stethoscope, and the observation of the pressure of blood in the arteries, would alike lose all significance if the movements of the heart and blood were other than he proved them to be "by

frequent dissection of living animals." Old remedies which the practice of ages had established have become intelligible in theory, and fresh paths for new advances have been suggested ; and newer generations of students, applying themselves to the study of the other organs and systems of the body on the basis which Harvey's labours provided, have found the method of experiment no less fruitful in results than he found it. In fact, the history of physiology has verified the opinion of Harvey's great contemporary Descartes, when he said "With respect to experiments, they become always more necessary the more one is advanced in knowledge." Increased experiment has ever preceded increased accuracy in diagnosis, increased scope for the effective employment of remedies has followed increased accuracy in diagnosis, in every department of practice. We have learned our lesson. We know what experiment has done for medicine already, and we have no reason for doubting that the future will confirm the experience of the past.

If so, then surely all those who know what has been —and all ought to know—are not merely justified in approving, but are in duty bound to encourage and to carry forward the use of the experimental method, for the furtherance of our knowledge, and for the good of humanity.

RESEARCH DEFENCE SOCIETY.

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Form B 7.

March, 1910.

Research Defence Society.

THE TRUTH ABOUT VIVISECTION.

VII.

THE NATIONAL WELFARE.

By the BISHOP OF WINCHESTER.

There is no joy, no honour, no privilege in human experience comparable to that of saving life. Who has not felt the thrill of deep emotion on meeting for the first time some sailor, or soldier, some lifeboat-man, or fireman, whose daring heroism has been the means of saving life? It is with an emotion scarcely less strong and profound that we are stirred, when we meet a man, whose long and patient researches have brought about some wonder-working discovery, whereby for the sentence of death has been substituted the promise of recovery, or whereby the tortures of pain have been dispelled, or the terrors of some devastating malady been for ever subdued.

Conspicuous among such men during the last half century have been those leaders in the sciences of biology, physiology and pathology, whose epoch-making discoveries have earned the gratitude of the human race. By diligent observation, by untiring perseverance, by accurate and skilful classification of phenomena, they have advanced step by step on the pathway of knowledge. The world of medicine and surgery has by them been revolutionised. The very conception of disease has been changed. Fresh

weapons for fighting against it have been found. The security of life has been increased. The tyranny of suffering has been mitigated. Through the skilled agencies of scientific enquiry the human race and the animal world have both of them been included within the operation of the blessings that have attended the progress of learning.

It is perhaps rash for anyone who has no first-hand acquaintance with such a subject to venture upon the expression of an opinion. But let us take any thoughtful person, within whose comparatively small circle of friends, relatives and acquaintances there may recently have occurred some serious surgical operation. He need be no expert, and yet, when he realizes what has just been effected under the protection of anæsthetics and with the comparative security of the antiseptic treatment, his heart will be full of unspeakable gratitude and gladness because of the great and good things that modern science has done. Or, again, let any thoughtful person compare the account of what smallpox was in our country a century ago with what it is now. Let him think of the extraordinary measure of success which has attended the quite modern treatment of rabies. Let him enquire into the modern methods of combating diphtheria, or malarial and Malta fever; and let him endeavour to realize what have been the benefits conferred upon the human race by the life-saving discoveries of modern science.

We may be the merest "laymen" in such subjects, and yet know that this list of examples might be almost indefinitely extended.

The growth of human knowledge has won these triumphs. And yet human knowledge is only in its infancy. There is no reason to doubt that, except perhaps in the matter of novelty, the glory of the discoveries of the 20th century is destined to exceed the glory of the discoveries of the 19th. That most famous and honourable physician, Harvey, who, in the 17th century, made the all-important discovery of the circulation of the blood, could never have foreseen the astounding achievements that have been attained by men like Jenner, Lister, and Pasteur. Without the foundation

of his work, theirs would have been impossible. Upon theirs, in days to come, other illustrious discoverers will erect a structure as enduring and as splendid in result as his. There is no limit to the range of widening knowledge. As long as the world lasts, men like Harvey, and Jenner, and Lister, and Pasteur, animated by the same pure-minded devotion, working in the same simple spirit of patient and accurate observation, and no less intent on the enlargement of human knowledge and on the benefit of mankind, will continue to make the unstinting contribution of all their powers to the lessening of the sum of human suffering and to the saving of human life.

Nor is there any need to qualify what has been said, because the great discoveries which have thus benefited the world have been obtained with the aid of observations and experiments in which vivisection has been included.

The great men of whom we have been speaking were men in whose character and in whose humanity we could have reposed absolute confidence. They were justly held in high esteem for their integrity of character; they were men of warm hearts and affectionate sympathies. Respecting two of these leading men of science, whom it was my own privilege to know at Cambridge, Sir George Humphry, and Sir Michael Foster, I can gladly bear my testimony, that they were men on whose high and unblemished character, no less than on their conspicuous abilities, that University could rely for the eminent share which they took in the firm foundation and sound organisation of the newer studies of Biology and Physiology. The experiments, which they, or the men to whom they delegated them, were wont to carry out, might be depended upon to satisfy the just requirements of true humanity.

Let us fully admit that in bygone times the whole standard of scientific enquiry was more low and crude. Instances of barbarity doubtless occurred, to the enduring shame of barbarous individuals. Legislation has rightly interposed to prevent the perpetration of acts of cruelty Only those who have been licensed can now conduct such experiments, and, even so, under conditions which impose the due precautions against the infliction of pain.

For the saving of human life, in the interests of human health, and in the cause of human knowledge, some such experiments are requisite. We cannot permit them to be freely risked upon human beings; although, as we know, there have been heroic instances of men who, for the cause of the human race, have allowed themselves to be experimented upon, to the loss of life, limb, or health. But it is evident, that, so long as due precautions are taken against the possibility of cruelty, it is truer wisdom and truer humanity to permit wise and trustworthy men to make such experiments upon the lower animals. Rats and mice and guinea-pigs and monkeys and rabbits and dogs and cats that, for vagrancy or other reason, have been condemned to death, may not unreasonably be selected in order to be subjected to the painless conditions secured by modern anæsthetics.

Let it not be supposed that the wonderful benefits derived from the recent discoveries through the aid of vivisection are limited to the protection of the health of the human race. The animals themselves, in an abundant and steadily increasing degree, have shared in the beneficent results of man's extended knowledge. In former days, there were wont to be scores of victims of rabies among the lower animals for any single case among men, women, or children. In the present day, protection against so dreadful a peril has been won for all living creatures. Anthrax, too, was a mysterious and virulent scourge that once used to decimate flocks and herds; but its virus has been detected and combated by similar methods of treatment. What has been called "preventive inoculation" has sufficed to arrest the diffusion of the poison. The protection of the sheep and cattle entrusted to the charge of mankind has been reinforced with a weapon of efficacy against a most deadly foe. Once more, as a result of careful experiment it has been ascertained that through the injection of tuberculin, animals infected with tuberculous disease can be detected at an early stage; and their removal from the herd prevents the spreading of the plague. It is possible, therefore, that by a strict process of selection in the breeding of cattle, science may accomplish in future days the eradication of tubercle from the category of the deadly diseases that prey upon our domestic animals.

Few of us attempt to consider the mystery of the relation of the human race to the brute creation. Tremendous indeed is the burden of the responsibility which results from man's unquestioned domination. The daily food of almost the entire human race is supplied by the slaughter of animals, birds and fish. Innumerable creatures are daily done to death in order that we may have the meals that will best suit our appetites or satisfy our desires. Countless are the animals which supply mankind with shoe-leather and sandals, with coats and clothes, with fur and feathers for warmth and finery. The pillows on which we rest are soft with the feathers that tell of the death of birds, the handles of our knives remind us that civilization exacts the penalty of death from the animal world. The sealskin jacket, the ivory billiard ball, the Russian leather purse, are ordinary illustrations of our obligations to the creatures for the little daily luxuries of social existence. It means death by violence; death inflicted without anæsthetics; death, in a vast proportion of instances, aggravated by fear, by suffering, and by wounds. In all periods of man's history, hunting, snaring, and fishing have been prosecuted for food and clothing and livelihood. In modern times, "game" is "preserved" in enormous quantities, in order to provide "sport." Hunting, shooting, and coursing are our national pastimes.

Once more, animals that are considered dangerous, offensive, harmful, or too numerous, are killed indiscriminately. Thus, whether wolves and bears, or rabbits, rats and mice, or moles, or snakes, or insects and vermin, they are destroyed without mercy. The life of insects is hardly regarded at all, and a crusade is proclaimed against rats that convey the germs of the plague and against insects that are the innocent causes of fever and other infections.

For the satisfaction of our appetites, for the provision of our comforts, for the increase of our amusement, for the protection of our health, we do not hesitate to encourage and organise the destruction, by violence, of the lower animals.

If, therefore, in the highest interests of the human race, for the saving of life and the protection of health, it be found wise and expedient to make experiments, under anæsthetics, upon a small number of selected lower animals, and to entrust the care of these observations to properly qualified persons, we are surely justified in this exercise of our responsibility for animal life. The progress of scientific knowledge must be secured ; and it is better to try the experiment of the action of some drug, or of some inoculation, upon the circulation, or upon the vital organs, of a lower animal, rather than to run the risk of the loss of life or health to human beings. Who could blame the man of science who, by experimenting upon monkeys, arrived at the true cause of Malta fever which had decimated our soldiers ? The cause having been discovered, the malady was, almost at once, nearly completely stamped out among our troops.

The mortality in cattle and horses is one of the most ghastly features in any war. Mankind is involved in a ceaseless and strenuous warfare against his deadly foes, ignorance, uncleanliness, and prejudice. The penalty of the struggle is represented in the yearly sacrifice of a comparatively small number of animals through experiments, for the most part, mercifully and painlessly carried out. To discover the causes of such pestilences as cancer and consumption, and to arrest their fearful ravages, would be at least one triumphant result which we may pray to see accomplished in the present century. We may well invoke the Divine blessing upon the labours of men, who, working for the extension of human knowledge, may find themselves crowned with the glory of the world's united gratitude for the eradication of some such fell disease and for the deliverance of human life from one of its deadliest foes. But, whether rewarded with such successes or not, they work for the good of their fellow men ; their life is spent in diligence and scientific search ; and their quest is truth.

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Form B 8.

March, 1910.

Research Defence Society.

THE TRUTH ABOUT VIVISECTION.

VIII.

THE BROWN DOG.

The facts about this dog have twice been carefully examined by persons of great authority, and the results of these examinations have been published. In 1903, an action for libel was brought against Mr. Stephen Coleridge, who was at that time Hon. Secretary to the National Antivivisection Society. He had declared in public that the Brown Dog had been "tortured." This action was tried before the Lord Chief Justice of England. It lasted four days, and every point of the evidence on either side was very thoroughly stated. The jury gave a verdict against Mr. Coleridge, with £2,000 damages. Again, the facts about the Brown Dog were very carefully considered, in December, 1906, by the Royal Commission on Vivisection. The evidence given before this Commission has long been published, and may be procured from Wyman & Co., 109, Fetter Lane, E.C.

The following is a true account of the case of the Brown Dog. In December, 1902, the dog was put under chloroform, and a slight operation was done on it. At this operation a small incision was made, under chloroform, and one of the ducts of the pancreas was ligatured. The dog was not in any way crippled or disabled, nor did it suffer in its general health. The little wound was carefully dressed, and healed in a day or two, and the dog got quite well.

It was kept for a long time, to see whether any change would occur in its general condition after what had been done, but it remained perfectly well. It had now and again a slight twitch ; but this "chorea," as the doctors call it, was not in any way due to the experiment. Dogs frequently have chorea, but remain in sound health. The dog had no pain or discomfort of any kind ; it was let out for exercise ; and it was just as comfortable as a dog in a dog fancier's shop.

On February 2nd, 1903, the dog was again put under chloroform, and a very small incision was made, so that the gland where the duct had been tied might be examined. The gland was found to be quite healthy : nothing had resulted from the tying of the little duct. Then, as the dog was profoundly unconscious under the chloroform, and to avoid using two dogs where one would do, the dog, still under chloroform, was used to demonstrate certain facts about the secretion of saliva. The dog was absolutely unconscious all the time: and, after the demonstration, it was killed then and there, under the chloroform. These facts were proved to the jury, in the Court of King's Bench, before the Lord Chief Justice of England, December, 1903.

The truth is, that the Brown Dog was profoundly unconscious of all that was done to it on each occasion. It died in its sleep, without fear, and without pain. We may none of us hope for such an easy death as that. We must expect anxiety, and fear, and pain. The Brown Dog had none. It just died in its sleep.

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Form B 9.

April, 1910.

Research Defence Society.

THE TRUTH ABOUT VIVISECTION.

IX.

A QUESTION OF RELIGION.

The following letters were published in *The Times*, March 30th, 1910. The Church Anti-Vivisection League is one of the smaller Anti-Vivisection Societies.

The Committee of the Research Defence Society desire to call attention to one point in Mr. Hewlett's letter. He says that 85,883 (he should have said 85,783) experiments were performed, in England and Scotland, in 1908, under certificates dispensing with anæsthetics. These experiments are described in the Parliamentary Paper on the subject; which may be obtained from Wyman & Sons, Fetter Lane, E.C., price 6d. They were all of them inoculations, or of the nature of inoculations. None of them involved any sort or kind of *operation* on any animal. No operation, more than the lancing of a vein just under the skin, is permitted to be done on any animal, except under an anæsthetic.

Of these 85,783 observations, no less than 12,500 consisted merely in exposing fishes and their eggs to water in different stages of purification and dilution. These 12,500 observations were made for the Royal Commission on the Disposal of Sewage. More than 10,000 observations, also, were made for Government Departments, County Councils, Municipal Corporations, or other Public Health Authorities: and about 5,000 were made for the testing and standardising of sera, vaccines, and drugs.

The Committee also desire to say that the Research Defence Society has nothing to do with the actual making of experiments on animals, nor with the recommending to the Home Office of applications for licenses and certificates under the Act.

I.

From Mr. Hewlett, C.A.V. League, to The Bishop of North Queensland.

London, 29th December, 1909.

My Lord,—As Chairman of the Church Anti-Vivisection League, which comprises many priests and loyal members of the Church, I have been commissioned to lay before the Bishops who have given the support of their honoured names to the Research Defence Society (a society formed specially for the encouragement of the vivisection of animals) the aspects of the case which, as heads of the Church in our land, have most probably never occurred to them, with regard to the effect this action of theirs has had upon many earnest Churchmen and sincere believers, both men and women.

And first we wish to assure your lordship that the faith of very many men and women is being fatally tried by the contemplation of the rulers of the Christian Church, those whom they feel should be the foremost champions of mercy and kindness, not only countenancing, but even helping forward a society whose practice involves the most terrible sufferings to thousands of innocent animals (*e.g.*, in 1908 no less than 85,883 experiments were made upon animals under certificates exempting the operators from using any anæsthetics at all), creatures who look to the same Creator as we do for their life and well-being, and who claim our care and sympathy as fellow-creatures of God, waiting also, with us, to be "delivered from the bondage of corruption."

Putting aside any question of utility in these admittedly awful experiments upon living animals, the results of which, we wish to remind your lordship, many well-known medical men contend (*a*) are of doubtful, or (*b*) of no value to the human race, or (*c*) could be discovered by other and lawful means, we desire most respectfully to ask

your lordship whether it is worth while to side definitely and publicly with those who uphold vivisection when adherence to it, which is not necessary to religious teaching or to episcopal dignity, is actually driving from the Church people which believe that our Lord Jesus Christ could not for a moment approve a practice which cannot escape being horribly cruel under any circumstances, whatever supposed good may result. We cannot think that your lordship would suppose that our Saviour, Who created and loves all animals, could be present at a vivisection to condone the pitiless torture of animals for a problematic or even temporary benefit to one of a higher creation when He Himself, by His own sacrifice upon the Cross, showed to eternity that the principle which animated Him was the sacrifice of the higher being for the lower, the exact opposite of the *raison d'être* of vivisection.

There are thousands of Christians who have now come to see that this is a moral question, which concerns each individual soul and not merely doctors and experts of one profession, and it is a constant stumbling-block to them to find that those who, from their very calling, should be the leaders in the cause of mercy to the animals, however much the interested and the worldly may mock at them, are even giving their names to the support of nameless horrors which those who have the courage and the piety to inquire into and understand are convinced can only be the outcome of the malice and cruelty of the Evil One. Even supposing we may be mistaken in our view, is it the part of charity for a Bishop of the Church to give his name to that which, having nothing to do with his sacred office, is a scandal and cause of offence to manifold members of his flock ?

The Church Anti-Vivisection League solemnly implores you, my lord, to leave a society which is torturing thousands of God's creatures every year in the name of science.

I am, my lord, yours faithfully,

ALFRED S. HEWLETT,
Chairman C.A.V. League.

II.

From The Bishop of North Queensland to Mr. Hewlett.

Bishop's Lodge, Townsville, N.Q.,

Feb. 11*th*, 1910.

Dear Sir,—It is always a matter of surprise to me that the opponents of the system of scientific medical research by experiments upon animals should be so slow to realise that those who differ from them may be honest and merciful men, acting deliberately, with a reasonable belief that their actions are right.

In your letter to me dated December 29 you ask me to withdraw from a "Society which is torturing thousands of God's creatures every year in the name of science." The Research Defence Society to which you thus refer was founded simply "to make known the facts as to experiments on animals, the immense importance to the welfare of mankind of such experiments, and the great saving of human life and health directly attributable to them." The dissemination of such information, which we honestly believe to be true, can only by extreme rhetorical license be termed "torturing God's creatures," or a practice involving "the most terrible sufferings to thousands of innocent animals." But it was in view of such rhetorical license among anti-vivisectionists, and the unfair position in which it places scientific medical men, that I first accepted my position as vice-president of the Research Defence Society.

You ask—"Is it the cause of charity for a Bishop of the Church to give his name to that which, having nothing to do with his sacred office, is a scandal and cause of offence to manifold members of his flock?" When you thus argue that a clergyman has no concern with medical research, I cannot help wondering whether you yourself have ever been brought face to face with the actualities of unknown disease. And since you have called my action into question, allow me to say that I live in a part of the tropics where diseases have heretofore received little or no scientific study. There are among us some diseases new to white men, and some old diseases which have obtained

new forms under new conditions. Sometimes the nature of the disease is unknown, as is the case in several fevers resembling dengue fever or malaria. But at other times, while the course of the disease is traceable, the remedy remains obscure, as is the case of filaria. Since I have identified myself with the scientific study of tropical diseases, I have been constantly approached by sufferers pathetically asking me if anything more is known about their maladies, which gain additional terror from the fact that they are mysterious in their nature and effect. Can you seriously believe that any honest effort on my part to relieve such anxiety is outside the scope of my office? Personally, I am unable to see how it can be so, when I remember that I hold my office for Him Who healed the sick.

And as to any "scandal and cause of offence" this may be to "manifold members of my flock." You probably have only thought of my connection with the Research Defence Society, but you might have gone further. I am happy to believe that I have been largely instrumental in the foundation of an Australian Institute of Tropical Medicine. In the laboratories of this institute there will certainly be some experiments upon animals—perhaps very few surgical experiments, but certainly experiments by inoculation. These experiments, whatever may be said to the contrary, will be carried on with humanity and with due regard to animal life. But it is also certain that all these experiments will be classed together as "vivisection" by some who, in the face of all evidence to the contrary, will consider them "nameless horrors," "intolerable cruelty," and the like. This is quite clearly recognized here, but the knowledge that a Bishop has been prominent in bringing this about has caused no scandal. The other day I received a letter from a prominent layman which concludes:—"North Queensland and the Islands of the Western Pacific will have reason to bless the thought which inspired you in suggesting the institute, and the persistent energy employed in carrying that idea to a successful issue." I hope I may be pardoned for quoting a letter of which I am naturally proud. I do so only to illustrate how humane and religiously-minded men regard the question of experiments upon animals when they live face to face with the potentialities of human suffering in obscure disease. How far all this may yet remain a "scandal and

cause of offence" in England I am unable to say, but you, as a moralist, must know that all causes of offence do not come under the category of wrongdoing; neither is a scandal always deserved.

The members of your league will probably maintain that the course of tropical diseases could be traced without the aid of experiments upon animals, or that medical knowledge is too dearly purchased by animal experiments. This position is quite intelligible, but remember that it is taken by men and women who live in England, and who are therefore not subject to obscure tropical diseases. Are you under such circumstances qualified to sit in judgment upon the conduct of those who think otherwise, whose hearts are stirred within them by the daily sight of little children wasting with diseases like ankylostomiasis, and men and women suffering hopelessly what might be cured by greater knowledge? I cannot pretend to have done anything to relieve human suffering that may be compared with the work of medical men whose names are being held up by anti-vivisectionists to undeserved contumely. But I have very deliberately identified myself with such men, because I believe them to be as adverse to cruelty as I know them to be filled with a burning zeal to alleviate human suffering, because I believe with them that experiments upon animals are justifiable and can be conducted with due regard to animal life. and because I realise that the dissemination of facts upon the value of animal experiments is rendered necessary by the exaggerations and rhetorical license of anti-vivisectionists. I shall be sorry if my motives are misunderstood and my actions try the faith of the weakest brother, but I cannot abandon a position which I believe to be right because certain good people, whom I think to be swayed by prejudice and error, are offended at me.

I am, yours faithfully,

GEORGE H. FRODSHAM,

Bishop of North Queensland.

For copies of this and other popular tracts, apply to the Hon. Secretary, Research Defence Society, 21, Ladbroke Square, London, W., or to any one of the Hon. Secretaries of the Branch Societies.

Form C1.

September, 1910.

Research Defence Society.

This Society was founded in January 1908, to make generally known the facts as to experiments on animals in this country, and the regulations under which they are conducted; the immense importance of such experiments to the welfare of mankind; and the great saving of human and animal life and health which is already due to them.

Not only tens of thousands of human lives have been saved by the help of experiments on animals, but tens of thousands of animals have been saved. There is not a day passes without lives being saved by what was learned from experiments on animals.

For more than thirty years, the anti-vivisection Societies have been trying to persuade you that the men who make these experiments are in the habit of torturing animals in secret, and are brutal cold-blooded cowards. These Societies have received about £100,000 from the public. What have they done with all that money? Have they stopped the men of science from studying cancer and plague and lockjaw and other diseases? Have they ever got one of them convicted of cruelty? Is it not a fact, that people are beginning to be tired of these anti-vivisection Societies, and to refuse to believe what they say? Do YOU believe that our English men of science are blood-thirsty brutes?

If you are in any doubt, send a post card to the Hon. Secretary, Research Defence Society, 21, Ladbroke Square, London, W., and he will send you some leaflets which will interest anyone seeking to know the truth.

REMEMBER THIS!

(1) No operation of any kind, more than the lancing of a vein just under the skin, is allowed to be done on any animal, in this country, unless the animal is under an anæsthetic, so that it shall not feel any pain from the operation

(2) In most of the cases where any operation is done, the animal is killed then and there under the anæsthetic. In the rest of these cases the operation is done under the anæsthetic, with antiseptics, like operations on us. If suppuration occurs, the animal is required to be killed: and no further observations must be made, after the operation, if they would cause pain, without an anæsthetic. There were 1,704 of these experiments in Great Britain in 1909, and no more. After the healing of the wounds, the animals are not necessarily, or even generally, in pain.

(3) The drug called *curare* is very seldom used, and is never used without an anæsthetic.

(4) Out of every 100 experiments, no less than 95 are inoculations, or of the nature of inoculations. That is to say, no cutting operation of any kind is done on the animal. These inoculations are made mostly on mice, rats, or guinea-pigs.

(5) The pain caused by these experiments has been shamefully and deliberately exaggerated by the anti-vivisection Societies.

(6) They deny the value of the discoveries which have been made by the help of experiments on animals. They want you to believe that the usual treatment of diphtheria is all wrong. They want you to believe that the men who are studying cancer in mice are all wrong. They want you to believe that the men who discovered the cause of Malta Fever are all wrong.

(7) Experiments on animals, by helping the men of science and the doctors to cure or prevent diseases, and to protect animals against diseases, save not only men, women and children, but also animals.

Think what it means, for men and women to be dying, in thousands, of typhoid fever, cancer, diabetes, and other diseases. **The Anti-Vivisection Societies would hinder the proper study of these diseases.**

Form C2.

May, 1910.

Research Defence Society.

SLEEPING SICKNESS.

In the windows of anti-vivisection shops, and on the leaflets published by anti-vivisection societies, you sometimes see a picture of a lean miserable dog. This picture is a copy of a real photograph. You may like to know the facts of the case.

The dog was inoculated at the Gordon Memorial College, Khartoum, for the study of a very common and fatal African disease, called nagana, which destroys vast numbers of horses, mules, cattle, and dogs. Nagana is a disease of the same nature as the "Sleeping Sickness" which destroys vast numbers of men, women, and children. This curse of Africa, the sleeping-sickness, was introduced into Uganda, about ten years ago, from East Africa, or from the Congo Territory. In 1908, the *Times* wrote of sleeping sickness as follows: "From the best statistics available, the number of deaths in the Uganda Protectorate during the last five or six years has considerably exceeded 200,000, or has been equal to more than two-thirds of the entire population. The shore of the Victoria Nyanza and its islands have been almost completely depopulated, and thousands of the sick have been abandoned by their terror-stricken relatives to starvation or to wild beasts." The following account of a sleeping-sickness camp in Uganda, under the care of Roman Catholic missionaries, was published in 1908 by Sir Henry Hesketh Bell, Governor of Uganda. "Even at the time when the disease had been considered to be of such an infectious nature that its victims were shunned like the plague-stricken, these exemplary missionaries had collected large numbers of the sufferers, and, in spite of the apparent futility of all curative measures, had devoted themselves to alleviating the pains and miseries of the doomed . . . On an average, there are 100 patients under the care of the mission, divided according to sex, and according to the stage of disease. In one enclosure was a lot of little black babies, seeming well and happy enough,

except for swelled glands in their necks, but none the less sure to die in a year or two." The patients in the later stage were a pitiful sight; "many of them shivered almost constantly, and drew about their emaciated limbs the brown bark-cloth which partly covered them. The drawn features and haggard eyes testified to the gnawing pains that almost constantly afflict them, and the unhappy creatures appeared to have special dread of being touched. Many of them, in an unguarded moment, put an end to their miserable lives, and it is a wonder that more of them do not do likewise. . . . . The dying patients were lying about, on beds of withered leaves; they had reached a degree of emaciation that was horrible to see. The unhappy creatures looked like skeletons, and only their doleful moaning indicated the presence of life in the wretched remains. A few, in whom nature was struggling hard, had gone raving mad; in spite of the fact that the poor creatures had perforce to be chained to heavy logs to prevent their doing harm, one almost envied them their insensibility to the tortures that afflicted their fellow victims."

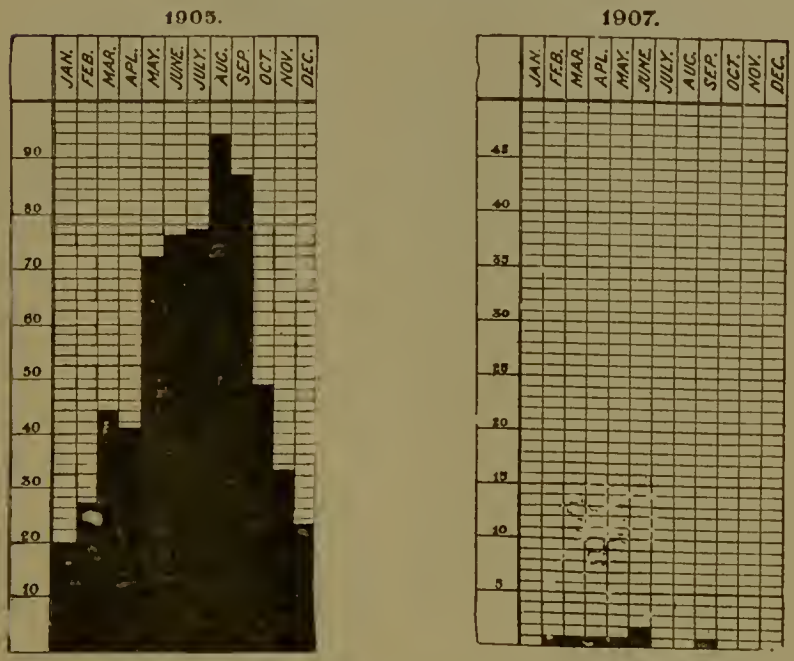
This ghastly disease, which has killed already more than a quarter of a million of men, women, and children, is threatening the Soudan. Beside men, women, and children, it has killed we know not how many hundred thousand dogs, horses, mules, and cattle. It is due to a particular kind of germs, which are conveyed from man to man, or from animal to animal, by the bite of a particular kind of blood-sucking flies, like horse-flies, which are called tse-tse flies. As particular kinds of mosquitoes convey malaria and yellow fever, so tse-tse flies convey sleeping-sickness among men and animals.

By experiments on animals, and by them alone, the true nature of the disease was discovered and proved; and all that we know of the life of these germs in the blood, was learned by the help of these experiments. All the good work that has already been done, by clearing-out the belts of reeds and brushwood infested by tse-tse flies, depends on knowledge gained from experiments on animals. So does all the work of separating healthy natives from infected villages. So does all the use of drugs to delay, and possibly even to stay, the course of the disease. Thousands of human lives, already, have been safeguarded, prolonged, or saved, by the help of these experiments.

Form C3.
June, 1910.

Research Defence Society.

MALTA FEVER.



Cases of Malta Fever among our Soldiers in 1905 and 1907.

MALTA FEVER is a very severe, painful, and slow disease. It causes extreme wasting; it lasts for months; and it is sometimes fatal. It used to be a terrible scourge of our garrison in Malta. The average stay in Hospital, for a man down with Malta fever, was four months. No less than **403** officers and men were invalided home, in 1905, as the result of Malta fever.

So far back as 1887, Sir David Bruce discovered the cause of this disease. It is due to a particular kind of germ. He proved this fact by experiments on animals. He found the germs, under the microscope, in the blood and organs of patients who had died of the fever: he got these germs to grow, apart from all other kinds, in test-tubes: and he injected a little of this "pure culture" under the skin of monkeys. These monkeys then showed the usual signs of Malta fever: and, when they died, or were killed, their blood and their organs were found to be swarming with the germs.

Later, in 1904, a Commission was sent out to Malta, by the Royal Society, at the request of the Government, to discover how the fever is conveyed. They found, after much hard work and many experiments, that it is not conveyed by air, or by drinking-water, or by pollution of sewage, or by contact: nor are the germs of Malta fever carried, like those of malaria, yellow fever, and sleeping sickness, by insects. Then

they found that the fever could be conveyed in food. A little "pure culture" of the germs was added to the food of some monkeys: and these monkeys all caught the fever.

Thus Bruce and his colleagues were led to examine the food-supply of our garrison: and, since goats' milk is so generally drunk in Malta, they examined the goats' milk. The goats looked healthy enough: but many of them were found to have the germs in their blood, and in their milk. So the Commission tested some thousands of goats: and it was discovered that quite half of them were affected, and that **10 per cent.** of them were actually secreting the poison of the fever in their milk. Monkeys fed on milk from one of these goats, even for one day, almost invariably got the disease.

About this time, the s.s. *Joshua Nicholson* shipped 65 goats at Malta, for export to America: and, of course, the milk was drunk on the voyage. There were 27 persons on board: and 17 of them have been traced. Of these 17 persons, 2 always boiled the milk, and thus were protected. Of the remaining **15**, no less than **5** got Malta fever. The goats were landed in America, put in quarantine, and carefully watched. A woman, living on the station, unfortunately drank the milk, caught the fever, and died. One after another, as time went on, the goats all showed signs of severe infection, and were all slaughtered: not one could be saved.

In Malta, early in 1906, Dr. Hardie and others were beginning to warn our men against the goats' milk: and, on July 1st, 1906, the official order was issued, forbidding the supply of goats' milk to the garrison.

See what happened. Remember, that the fever had not been stopped, though it may have been checked, by other sanitary measures. Remember, also, that the worst months for the fever, always, were July, August, and September.

In 1905, there had been **643** cases, among our soldiers alone: and, in the navy, about the same number.

In 1906, up to July 1st, there were **123** cases. During the rest of the year, including the three worst months, there were **40** cases.

In 1907, there were **11** cases. In 1908, there were **5** cases. In 1909, there was **1** case. In 1910, up to the present time, **NO CASES.**

These figures were made public, a few days ago, in the House of Commons, by the Under Secretary of State for the Colonies. (See the *Times*, June 14th, 1910.)

The civil population of Malta went on drinking the goats' milk, and suffering from the fever.

It remains, to discover how the goats become infected: and a Commission has been appointed, to study this question.

RESEARCH DEFENCE SOCIETY.

All applications for literature to be made to the Hon. Secretary, 21, Ladbroke Square, W. The Hon. Secretary will gladly receive the names of all who desire to become Members or Associates of the Society, and thus to advance its good work.

Form C4.

June, 1910.

Research Defence Society.

EXPERIMENTS ON DOGS.

The total number of experiments on animals in 1909, in Great Britain and Ireland, was 86,561, against 89,024 in 1908. Of these experiments, 95 per cent. were inoculations, or experiments of the nature of inoculations. That is to say, only 5 per cent. of the experiments involved any sort or kind of **operation** on any animal. No operation, more than the pricking of a vein just under the skin, is allowed to be done on any animal, in this country, without an anæsthetic.

Dogs and cats are very seldom used for inoculations. The animals used, in the vast majority of cases, are mice, rats, guinea-pigs, or rabbits.

Practically, dogs and cats are only used for experiments done under anæsthetics. In a great number of these experiments, the animal is killed then and there, under the anæsthetic, without recovering consciousness. We are none of us likely to have such an easy death as that. In the remaining cases, the animal is allowed to recover from the anæsthetics, and to be kept for observation. These operations are required to be performed antiseptically; and, if the antiseptic precautions fail, and suppuration occurs, the animal is required to be killed. After the healing of the wound, the animals are not necessarily, or even generally, in pain : and no further observations, which might cause pain, are allowed, unless the animal is again put under an anæsthetic.

Dogs and cats take anæsthetics well : and it is quite certain that they can be kept absolutely unconscious of everything, just as we are, when we take chloroform or ether for an operation.

Dogs have no terror of an anæsthetic; nor are they frightened, as we are, at the thought of an operation. Of course, if a dog be wild, it objects to being brought into any room, or to being handled at all. If a dog that is not wild be brought into the room, it is as pleased to come into that room as into any other room : there are never any signs of any fright in these animals when they are present in the room.

The usual way of giving an anæsthetic to dogs was fully described to the Royal Commission by Professor Starling and Dr. Dudley Buxton. (See published Evidence, Vol. 1, p. 122, Dec. 19th, 1906, and Vol. 3, p. 249, July 17th, 1907). Usually, half an hour before the experiment, a dose of morphia is given to the dog. The effect is, that the dog becomes sleepy and stupid, and then sometimes it will lie down quietly, and the mask with the chloroform or ether can be put over its nose, and it will take the anæsthetic that way. or it

is placed in a box, and some wool soaked in the anæsthetic is put in the box. The dog inhales the anæsthetic, and goes to sleep in the box. **It is not put in position on the table till it is fully under the influence of the anæsthetic.**

It is tied in position, because a dog cannot lie on its back as we can. And, of course, there are many operations done on us, during which we are tied-up in particular positions; not to keep us from moving, for we are absolutely unconscious of everything, but because we must be in that particular position, or the operation could not be done.

It was said by the National Canine Defence League, in 1903, that dogs, "on account of their docility and obedience to the word of command, are the animals chiefly selected for torture." It would be hard to say anything more false than that. The number of dogs used, compared with other animals, is very small indeed. But, in physiology, there are some researches for which a dog has to be used. The production of lymph in the body, and certain facts as to the circulation, and as to the processes of digestion, were made out by the help of experiments on dogs: and so was the best method of doing artificial respiration.

We must remember, also, that dogs often die of distemper. The only way to find how to protect dogs against that disease, must be by experiments on dogs.

Evidence of Professor Starling before the Royal Commission on Vivisection, Dec. 12th, 1906.

"Though I have been engaged in the experimental pursuit of physiology for the last seventeen years, on no occasion have I ever seen pain inflicted in any experiment on a dog or cat, or, I might add, a rabbit, in a physiological laboratory in this country: and my testimony would be borne out by that of any one engaged in experimental work in this country."

REMEMBER

1. A dog is not frightened, as we are, at the thought of an operation.

2. It takes the anæsthetic **before** it is put in position for the experiment.

3. During the whole of the experiment, it is unconscious, and knows nothing of what is happening.

4. In most cases, it is killed before it recovers consciousness

5. In those cases where it is allowed to recover consciousness, the wound must be dressed antiseptically; and, if the antiseptic precautions fail, and the wound suppurates, the dog must be killed under an anæsthetic.

If you want to know the **TRUTH** about experiments on animals in this country, at the present time, under the restrictions of the Act, send a postcard to the Hon. Secretary, RESEARCH DEFENCE SOCIETY, 21, Ladbroke Square, W.

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